

Amendments to the Drawing Figures:

FIG. 5 is amended to insert lines representing the lower end of the sleeve in FIG. 5. These lines were inadvertently omitted in the originally filed drawings. It is clear from the other drawings/views of the tool holder, and from the associated description, that the structure has the shape which was intended to be indicated by these lines.

A copy of FIG. 5 is attached with this Amendment showing the changes to the drawing figure in red-- i.e., the addition of the inadvertently omitted lines.

Additionally, a new formal drawing sheet containing corrected FIG. 5 will be prepared and submitted to replace the originally submitted drawing sheet.

REMARKS

Claims 1 through 22 are pending in the application. The Office Action incorrectly indicates that only 21 claims are pending. As filed, this Application contained claims 1 through 22. The Examiner is respectfully requested to confirm that there are 22 claims pending in this Application.

Claims 1-4, 7-12 and 16-21 are initially rejected.

Claims 5-6 and 13-15 are indicated as containing allowable subject matter.

In the Specification

Paragraphs [0007], [0008], [0010], [0013], [0032], [0033], and [0034] are amended herein, as set forth above in the "amendments to the specification.

As evident in the Amendments to the Specification, beginning on page 2, paragraphs [0007], [0008], [0010] and [0013] are amended to correct typographical errors.

Paragraphs [0032], [0033] and [0034] are amended as suggested by the Examiner in regard to the use of trademarks in the application. Specifically, the amendment to these paragraphs replaces occurrences of trademarks with such trademarks typed in all capital letters.¹

In the Drawings

As noted by the Examiner in paragraph 2 of the Office Action, lines representing the lower end of the sleeve in FIG. 5 were inadvertently omitted.

A copy of FIG. 5 showing the amendment to the figure in red, i.e., the addition of the missing lines, is submitted with this Amendment.

A new formal drawing sheet, containing corrected FIG. 5, will be prepared and submitted to replace the originally submitted drawing sheet.

§102(b) Claim Rejections

- A. Claims 1-3, 7-12 and 16-19 stand rejected as anticipated by JP 9-38837.
- B. Claims 1-2, 4 and 20-21 stand rejected as anticipated by JP 7-299614.

¹ Note- In the Office Action, the © symbol (designation for copyright) was inadvertently used. In this Amendment, as in the Application, use of the proper ™ symbol (designation for trademark) is maintained.

C. Claim 20 stands further rejected as anticipated by each of JP 2001-310228 and JP 2002-346865.

1. Claims 1-3, 7-12, 16-21 are canceled by this Amendment.
2. Claim 4 is rewritten in independent form, from which claims 5 and 6 depend.

Claim 4 stands rejected as anticipated by JP 7-299614 (Hitoshi). An exemplary embodiment of claim 4 is illustrated in FIGS. 9A and 9B. A comparison of these figures to the tool holder shown and described in Hitoshi reveals clear distinctions in the structure, which distinctions are particularly recited in claim 4.

Specifically, claim 4 recites, in pertinent portions:

- ...a cavity formed in a rear face of the shank, the cavity having an exterior surface forming at least part of the first circular cantilever;
- a pull stud having a first end captured in the cavity and a second end external of the cavity, the second end adapted to have tension applied thereto after the rotary tool holder is positioned in the spindle; and
- wherein the tension on the second end causes the first end to apply an outward radial force on the cavity which urges the exterior surface in a radially outward direction toward the tapered bore when the shank is positioned therein.

In Hitoshi, it does appear that, as stated by the Examiner, “When the pull stud 9 is pulled, ball 47 is cammed radially outward to flex the rear cantilevered section radially outward against the taper hole 3a.”

However, claim 4 more particularly claims the structure of the Applicant’s tool holder (reproduced above) so as to require more than just that the cantilevered section is flexed radially outward when tension is applied to the pull stud. Specifically, as recited in the claim—it is the “end of the pull stud,” not a “ball 47,” which must be captured in the cavity, the exterior of which forms at least part of the circular cantilever. Additionally, it is the “end of the pull stud” that must apply the outward radial force on the cavity, not the “ball 47.”

In Hitoshi, the threaded “cavity” (40 or 41) in the end of the tool holder does not have “an exterior surface forming at least part of the circular cantilever.” Additionally, it is not the

end of the pull stud which applies an outward radial force on the cavity 40/41 when tension is applied to the pull stud.

In Hitoshi, the outward radial force on the wall of the cavity forming the circular cantilever is applied by multiple ball bearings 47 captured between the cantilever and inner members of the tool holder. As noted above, when tension is applied to the pull stud, the ball bearings 47 are cammed radially outward to flex the cantilevered section radially outward against the tapered hole. Consequently, it is not the end of the pull stud which is captured in the cantilever cavity, and thus the end of the pull stud does not “apply” the outward radial force, as is recited in claim 4.

Hitoshi does not disclose or teach at least these limitations. Therefore, claims 4, and 5-6 which depend therefrom, are believed to be patentable over Hitoshi.

3. Claim 22 seems to have been inadvertently overlooked in the Office Action. Nevertheless, by this Amendment, claim 22 is rewritten in independent form for the reasons set forth below.

Amended claim 22 recites a rotary tool holder having, inter alia, both “an optimized taper” and “an annular recessed region” intermediate the front and rear contact portions.

The prior art of record does not teach or disclose a tool holder having an optimized taper in combination with an annular recessed region. Therefore, claim 22 is believed to be patentable over the prior art.

New Claim

4. New claim 23 is added by this Amendment. New claim 23 is similar to amended claim 22, except that it is not limited to having an “optimized taper.” Instead, the claimed rotary tool holder having an “annular recessed region” intermediate the front and rear contact portions is believed to be patentable for the reasons explained below.

The prior art indicates that a tool holder with an annular recessed region as described in the application is not disclosed or taught in the prior art, except as used in combination with a circular cantilever. The inclusion of an annular recessed region in combination with a circular cantilever may result from a recognition by those of skill in the art that, as explained in paragraph [0039] of the application: “The annular recessed region 80 also permits the free

end 76 of the circular cantilever 70 to move radially without stressing or deforming the outer surface of the tapered shank 58.”

However, the prior art does not appear to recognize, as also explained in paragraph [0039], that: “The annular recess 80 also facilitates manufacture of the tapered outer surface of the shank 58 to the proper tolerances to achieve a good fit in the tapered bore 53 of the spindle 55.”

Moreover, as explained in paragraph [0004] of the application, during operation the taper of conventional tool holders can even become convex, which results in destabilization of the tool holder for obvious reasons. However, the annular recessed region, recited in claim 23 for example, will permit a degree of convexity in the taper of the claimed tool holder without resulting in destabilization. As can be understood, the depth of the annular recessed region will allow for some amount of convexity without the surface contacting the sides of the tapered hole of the spindle, unless the convexity were so severe that it exceeded the depth of the annular recess- which is unlikely.

Therefore, some amount of convexity in the taper of the tool holder, beyond any amount acceptable for conventional tool holders, is tolerated due to the annular recessed region without a resulting destabilization of the tool holder.

Accordingly, new claim 23 is believed to be patentable over the prior art.

Allowable Subject Matter

Claims 5-6 and 13-15 are indicated as allowable if rewritten in independent form, including all the limitations of the base claim and any intervening claims.

The Applicant appreciates the early indication of allowable subject matter, and claims 13 through 15 have been rewritten in independent form as suggested.

However, claims 5 and 6 are not rewritten at this time, because, as explained in more detail above, the Applicant believes that (amended) claim 4 is patentable over the prior art. Claims 5 and 6 depend from claim 4, and thus are allowable if claim 4 is ultimately determined to be allowable.

Conclusions

The Specification and Drawing Figures are amended as set forth herein.

Claims 1-3, 7-12 and 16-21 are canceled.

Appl. No. 10/762,005
Amdt. dated July 11, 2006
Reply to Office Action of January 27, 2006
Attorney Docket K-1945

Claim 4, as rewritten in independent form, is believed to be patentable over JP 7-299614 (Hitoshi) for the reasons set forth in detail in paragraph 2. Claims 5 and 6 depend from claim 4.

Claims 13 through 15 are rewritten in independent form, as suggested.

Claim 22, as rewritten in independent form, is believed to be patentable for the reasons set forth in detail in paragraph 3.

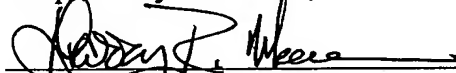
New claim 23 is believed to be patentable for the reasons set forth in detail in paragraph 4.

In accordance with the foregoing, amended claims 4-11, 13-15 and 22-23 are believed to be in condition for allowance. Therefore, reconsideration and allowance are respectfully requested.

Extension of Time

Applicants hereby Petition for an extension of time of three months from the Office Action date of January 27, 2006, until July 27, 2006. Please charge the petition fee for such extension to Deposit Account No. 502867.

Respectfully submitted,



Kennametal Inc.
P. O. Box 231
Latrobe, PA 15650
(724) 539-5485 Phone
(724) 539-5903 Fax

Larry R. Meenan
Attorney for Applicant(s)
Reg. No. 33,423
Date: July 11, 2006



Annotated Sheet

Title - Tool Holder
Inventor's Name - Ted R. Massa et al.
Express Mail Number - EV181371585US

K-1945

FIG. 5

